IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Michael MULLIGAN *et al.*	Confirmation No.: 9432
Application No.: 10/043,936	Examiner: Doan, Duyen My
Filed: January 11, 2002	Group Art Unit: 2452

For: NETWORK SERVICES BROKER SYSTEM AND METHOD

Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

This Appeal Brief is submitted in support of the Notice of Appeal dated March 23, 2011.

I.   REAL PARTY IN INTEREST

The real party in interest is Nokia Corporation, a corporation organized under the laws of
Finland and having a place of business at Keilalahdentie 4, FIN-02150 Espoo, Finland. The
above referenced patent application is assigned to Nokia Corporation.

II.   RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals and interferences.

III.   STATUS OF THE CLAIMS

Claims 1-6 and 8-41 are pending in this Application, in which claim 7 has been canceled, claims 22, 26-28 are original claims, and claims 1-6, 8-21, 23-25, and 29-41 have been previously presented.

Claims 1-6 and 8-41 were finally rejected in an Office Action dated December 23, 2010. It is from the final rejection of claims 1-6 and 8-41 on December 23, 2010, that this Appeal is taken.

IV.   STATUS OF AMENDMENTS

The amendment to claim 1 submitted concurrently herewith this Appeal Brief, has not yet been entered and is not relied upon in this appeal. Appellants do not know whether the Examiner will enter the Amendment submitted concurrently herewith. Accordingly, Appellants present two claim appendices, the first directed to the current claims, and the second directed to the claims if the Amendment is entered by the Examiner.

V.   SUMMARY OF THE CLAIMED SUBJECT MATTER

The claimed invention addresses problems associated with network communication systems and facilitating access to service functionality. In particular, the claimed invention is directed to determining to communicate with one or more terminals operable in a first type of network system and determining to expose a loosely-coupled interface to a service provision infrastructure for brokering added-value network services from one or more of the terminals and network systems to the service provision infrastructure. The service provision infrastructure hosts network-enabled applications for use by one or more of the terminals and is configured to interface with a second type of network system.

Independent claim 1 recites:

1. An apparatus comprising:

at least one processor (See, e.g., Specification, page 47, line 1 – page 48, line 13, FIGS. 1, 4-6); and

at least one memory including computer program code (See, e.g., Specification, page 47, line 1 – page 48, line 13, FIGS. 1, 4-6),

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following:

determine to communicate with one or more terminals operable in a first type of network system (See, e.g., Specification, page 5, lines 4-12, page 13, lines 8-19, page 18, line 14 – page 19, line 8, FIGS. 1, 2, 12);

determine to expose a loosely-coupled interface to a service provision infrastructure for brokering added-value network services from one or more of the terminals and network systems to the service provision infrastructure, wherein the service provision infrastructure is for use by one or more of the terminals that hosts network-enabled applications and that is configured to interface with a second type of network system (See, e.g., Specification, page 5, lines 4-12, page 7, line 5 – page 8, line 19, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, FIGS. 1, 2, 14-16).

Dependent claim 11 recites:

11. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to access a terminal location service to allow a location of the terminal to be provided to the network-enabled application (See, e.g., Specification, page 5, line 13 – page 6, line 4, page 14, lines 13-22, page 28, line 6 page 29, line 6, FIGS. 1, 7).

Independent claim 18 recites:

18. A method, comprising:

determining to provide at least one network service broker logically between one or more network infrastructures, wherein at least one of the network infrastructures is of a first type of network system, and a service provision infrastructure operating on top of the network infrastructures and configured to interface with a second type of network system wherein the network service broker comprises at least one terminal-coupled broker to communicate directly with one or more terminals (See, e.g., Specification, page 5, lines 4-12, page 13, lines 8-19, page 18, line 14 – page 19, line 8, FIGS. 1, 2, 12);

determining to expose a loosely-coupled interface of the network service broker to the service provision infrastructure (See, e.g., Specification, page 5, lines 4-12, page 7, line 5 – page 8, line 19, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, FIGS. 1, 2, 14-16); and

determining to facilitate access by network applications of the second type of network system to value-added services within the at least one network infrastructure of the first type of network system via the loosely-coupled network service broker interface (See, e.g.,

Specification, page 5, lines 4-12, page 7, line 5 – page 8, line 19, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, FIGS. 1, 2, 14-16).

Independent claim 30 recites:

30. A method, comprising:

determining to provide at least one network service broker logically between one or more terminals operating in a first type of network system and a service provision infrastructure operating on top of a network infrastructure and configured to interface with a second type of network system (See, e.g., Specification, page 5, lines 4-12, page 13, lines 8-19, page 18, line 14 – page 19, line 8, FIGS. 1, 2, 12);

determining to expose a loosely-coupled interface of the network service broker to the service provision infrastructure (See, e.g., Specification, page 5, lines 4-12, page 7, line 5 – page 8, line 19, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, FIGS. 1, 2, 14-16); and

determining to facilitate access by the network applications directly to value-added services provided by the terminals via the loosely-coupled network service broker interface (See, e.g., Specification, page 5, lines 4-12, page 7, line 5 – page 8, line 19, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, FIGS. 1, 2, 14-16).

Independent claim 33 recites:

33. A method, comprising:

determining to provide at least one hybrid network service broker logically between one or more network infrastructures, wherein at least one of the network infrastructures is of a first type of network system, and a service provision infrastructure operating on top of the network infrastructures and configured to interface with a second type of network system, and between one or more terminals and the service provision infrastructure (See, e.g., Specification, page 5, lines 4-12, page 13, lines 8-19, page 18, line 14 – page 19, line 8, FIGS. 1, 2, 12);

determining to expose a loosely-coupled interface of the hybrid network service broker to the service provision infrastructure (See, e.g., Specification, page 5, lines 4-12, page 7, line 5 – page 8, line 19, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, FIGS. 1, 2, 14-16); and

determining to facilitate access by the network applications via the loosely-coupled hybrid network service broker interface directly to value-added services provided via one or both of the terminals and to value-added services provided by the network infrastructures (See, e.g., Specification, page 5, lines 4-12, page 7, line 5 – page 8, line 19, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, FIGS. 1, 2, 14-16).

Independent claim 34 recites:

34. A method, comprising:

determining to provide a use authorization voucher to a visited network service broker associated with a visited network (See, e.g., Specification, page 45, line 21 – page 46, line 12, FIGS. 1, 2, 19);

receiving, at a service provision infrastructure, an address of the visited network service broker from a home network service broker associated with a home network of a terminal that has roamed to the visited network, wherein the home network service broker exposes a loosely-coupled interface to the service provision infrastructure to facilitate communication therebetween (See, e.g., Specification, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, page 45, line 4 – page 46, line 23, FIGS. 1, 2, 19);

determining to access the visited network service broker by the service provision infrastructure using the address of the visited network service broker (See, e.g., Specification, page 45, line 4 – page 46, line 23, FIGS. 1, 2, 19); and

determining to facilitate access by the service provision infrastructure to the web services available from the visited network via a loosely-coupled interface of the visited network service broker that is exposed to the service provision infrastructure (See, e.g., Specification, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, page 45, line 4 – page 46, line 23, FIGS. 1, 2, 19).

Independent claim 38 recites:

38. A method comprising:

determining to communicate between a service provision infrastructure and a home network service broker associated with a home network via a loosely-coupled interface of the

home network service broker exposed to the service provision infrastructure (See, e.g., Specification, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, page 45, line 4 – page 46, line 23, FIGS. 1, 2, 19); and

determining to communicate between the home network service broker and a visited network service broker associated with a visited network, wherein the home network service broker serves as a proxy in accessing a service functionality available via the visited network (See, e.g., Specification, page 45, line 4 – page 46, line 23, FIGS. 1, 2, 19).

Independent claim 39 recites:

39. A method comprising:

determining to provide a visited network service broker logically between a visited network and a service provision infrastructure operating on top of a network infrastructure (See, e.g., Specification, page 45, line 4 – page 46, line 23, FIGS. 1, 2, 14, 16, 19);

determining to expose a loosely-coupled interface of the visited network service broker to the service provision infrastructure (See, e.g., Specification, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, page 45, line 4 – page 46, line 23, FIGS. 1, 2, 19); and

determining to facilitate access by the service provision infrastructure to a service functionality available from the visited network via the loosely-coupled interface of the visited network service broker (See, e.g., Specification, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, page 45, line 4 – page 46, line 23, FIGS. 1, 2, 19).

Independent claim 40 recites:

40. An apparatus comprising:

at least one processor (See, e.g., Specification, page 47, line 1 – page 48, line 13, FIGS. 1, 4-

6); and

at least one memory including computer program code (See, e.g., Specification, page 47, line

1 – page 48, line 13, FIGS. 1, 4-6),

the at least one memory and the computer program code configured to, with the at least one

processor, cause the apparatus to perform at least the following:

determining to communicate directly with one or more terminals (See, e.g., Specification,

page 5, lines 4-12, page 13, lines 8-19, page 18, line 14 – page 19, line 8, FIGS. 1, 2,

12);

determining to access a service functionality from a network infrastructure (See, e.g.,

Specification, page 5, lines 4-12, page 13, lines 8-19, page 18, line 14 – page 19, line

8, FIGS. 1, 2, 12); and

determining to expose a loosely coupled interface to a service provision infrastructure,

wherein the loosely-coupled interface comprises a web services-based interface

having Extensible Markup Language (XML) schemata built on top of a web services

platform to expose the service functionality available via a network (See, e.g.,

Specification, page 5, lines 4-12, page 7, line 5 – page 8, line 19, page 13, line 8 –

page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line

15, FIGS. 1, 2, 14-16).

Independent claim 41 recites:

41. A non-transitory computer readable storage medium carrying one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to at least perform the following steps:

    receiving a request for value-added service information from a service provision infrastructure loosely coupled to the apparatus (See, e.g., Specification, page 5, lines 4-12, page 13, lines 8-19, page 18, line 14 – page 19, line 8, FIGS. 1, 2, 12);

    obtaining the value-added service information directly from a terminal coupled to the apparatus (See, e.g., Specification, page 5, lines 4-12, page 7, line 5 – page 8, line 19, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, FIGS. 1, 2, 14-16); and

    determining to provide the obtained value-added service information to the service provision infrastructure (See, e.g., Specification, page 5, lines 4-12, page 7, line 5 – page 8, line 19, page 13, line 8 – page 14, line 12, page 20, line 20 – page 21, line 16, page 41, line 19 – page 43, line 15, FIGS. 1, 2, 14-16).

VI.   <u>GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL</u>

A. Claims 1-6, 8-33, 40, and 41 were rejected under 35 U.S.C. §103(a) for obviousness predicated upon *Jiang et al.* (US 6,741,853) in view of *Hertling et al.* (US 2004/0205117).

B. Claims 34-39 were rejected under 35 U.S.C. §103(a) for obviousness predicated upon *Jiang et al.* in view of *Hertling et al.*, and further in view of *Tummala et al.* (US 6,915,345).

VII.   ARGUMENT

A.   CLAIMS 1-6, 8-33, 40, AND 41 ARE NOT RENDERED OBVIOUS BY *JIANG ET AL.* AND *HERTLING ET AL.*

The Examiner bears the initial burden of establishing a *prima facie* basis to deny

patentability to a claimed invention under any statutory provision. In rejecting a claim under 35

U.S.C. §103(a), the Examiner is required to provide a factual basis to support the obviousness

conclusion. *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967); *In re Lunsford*, 357

F.2d 385, 148 USPQ 721 (CCPA 1966); *In re Freed*, 425 F.2d 785, 165 USPQ 570 (CCPA

1970). Further, in rejecting a claim under 35 U.S.C. §103(a) it is incumbent upon the Examiner

to establish the requisite motivation. As maintained by the Supreme Court of the United States in

KSR Intern. Co. v. Teleflex Inc., 127 S.Ct. 1727 at 1741, an obviousness "analysis should be

made explicit." See, *In re Kahn*, 441 F.3d 977, 988 (C.A. Fed. 2006) ("[R]ejections on

obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be

some articulated reasoning with some rational underpinning to support the legal conclusions of

obviousness"). Indeed, the Examiner is required to make specific factual findings, not

generalizations. *See M.P.E.P. §2144.08 II. A. 5.* That initial burden required by procedural **due**

process of law has not been discharged.

Independent claim 1 recites, *inter alia*, "determine to expose a loosely-coupled interface

to a service provision infrastructure for **brokering added-value network services from one or**

more of the terminals and network systems to the service provision infrastructure, wherein

the service provision infrastructure is for use by one or more of the terminals that **hosts network-**

enabled applications and that is configured to interface with a second type of network system."

Independent claims 18, 30, 33, 40, and 41 recite similar features.

The Examiner (per page 4 of the Final Office Action) appears to allege that the Wireless Portal Middleware 210 of *Jiang et al.* corresponds to a network service broker that comprises at least one terminal-coupled broker to communicate directly with one or more terminals and an interface for brokering added-value network services from one or more terminals and network systems to a service provision infrastructure. In addition, the Examiner (per pages 4 and 5 of the Final Office Action) acknowledges that *Jiang et al.* fails to disclose a loosely-coupled interface, but alleges that *Hertling et al.* remedies this deficiency. Appellants respectfully disagree with the Examiner's conclusion that the above discussed features are rendered obvious by *Jiang et al.* and *Hertling et al.*

Jiang et al., in pertinent part, discloses (emphasis added):

Abstract: A method for providing information to devices in a format preferable to a device type. This is achieved by receiving an information request, **detecting the device type from which the information request originated, adapting the content for presentation on the device type,** and presenting the information to the device. By the use of this invention, telecommunications users are presented information in a format suitable to the device being used.

Col. 6, lines 41-50: Referring to FIG. 2 of the drawings, the reference numeral 200 generally designates a wireless communication system, which embodies features of the present invention. Specifically, a method for integrating services and features comprising a Wireless Portal Middleware (WPM) 210 connected to a plurality of Wireless Access Network Providers (WANP) 220-26 and the Internet 270, wherein the WPM 210 provides a single portal through which a user's MSs 240-46 communicate with ICPs 250-60 via the Internet 270.

Col. 7, lines 3-17: Furthermore, unlike the prior art discussed above, typically requiring an MS user to subscribe to a portal for each MS, the present invention's novel and useful feature allows a plurality of devices to access services and information from a single portal. A single portal allows value-added services that provide a seamless integration between the various wireless and wireline devices, providing a mechanism to share data and information between MSs, limiting the impact of device-dependent protocols and service providers. Furthermore, the **WPM 210 provides MS users seamless access to information networks regardless of the type of device available to the user,** whether it is a cell phone 240, a mini-browser phone 242, a laptop computer 244, or a PDA 246, among others, by providing a central repository for subscriber information and services.

First, *Jiang et al.* fails to disclose that the Internet Content Providers 250-260 (apparently the alleged service provision infrastructure) host network-enabled applications for use by one or more of the terminals. The Examiner (per page 2 of the Final Office Action) appears to allege that the Internet Content Providers 250-260 inherently host service applications. *Jiang et al.* is conspicuously silent with respect to **hosting network-enabled applications**. Further, and contrary to the Examiner's assertions, it is <u>not</u> inherent that the Internet Content Providers 250-260, or even the Mobile Stations 240-260, host network-enabled applications, as network-enabled applications could conceivably be hosted by various other entities. In addition, *Jiang et al.* simply discloses that the Wireless Portal Middleware 210 provides a single portal through which users of the Mobile Stations 240-260 have <u>access to information networks</u> (see *Jiang et al.*, col. 6, lines 47-50 and col. 7, lines 3-17).

Second, *Jiang et al.* fails to disclose that the Wireless Portal Middleware 210 (the alleged network broker) brokers added-value network services **from** the Mobile Stations 240-246 (the alleged one or more terminals) **to** the Internet Content Providers 250-260 (the alleged service provision infrastructure). *Jiang et al.*, at best, discloses that the Wireless Portal Middleware 210 provides users of the Mobile Stations 240-260 with <u>access to information networks</u> (see *Jiang et al.*, col. 7, lines 3-17).

Finally, the *Hertling et al.* reference, which is relied upon solely for an alleged disclosure of a loosely-coupled interface, fails to at least remedy the above discussed deficiencies of *Jiang et al.* Furthermore, Appellants respectfully submit that the applied references provide <u>no</u> reason as to why one having ordinary skill in the art would modify the system of *Jiang et al.*, as proposed by the Examiner, but rather the Examiner's reasons on pages 4 and 5 of the Final Office Action appear to be nothing more than an opinion, which is unsupported by any facts.

Specifically, *Jiang et al.* is simply directed to a method and system for providing information to devices in a format preferable to a device type, by <u>detecting</u> the device from which an information request originated and <u>adapting</u> the content for presentation on the device. See *Jiang et al.*, Abstract. *Hertling et al.* does nothing to suggest the introduction of the alleged loosely coupled interface of *Hertling et al.* into a system of *Jiang et al.* That is, the Examiner has failed to provide a factual basis as to why one of ordinary skill in the art would modify the system of *Jiang et al.* to include a determination to expose a loosely-coupled interface to a service provision infrastructure for brokering added-value network services from one or more terminal and network systems to the service provision infrastructure. The Examiner's rationale appears to be nothing more than an agglomeration of bits and pieces of the claimed subject matter thrown together through the exercise of impermissible hindsight, without any of the "articulated reasoning with some rational underpinnings" required by the U.S. Supreme Court, *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007). Thus, the Examiner's conclusion of obviousness relies on <u>impermissible</u> hindsight.

Therefore, even if, *arguendo*, the applied references are combined as proposed by the Examiner, and Appellants do not agree that the requisite basis for the asserted motivation has been established, the invention defined in independent claims 1, 18, 30, 33, 40, and 41 would not result. Thus, dependent claims 2-6, 8-17, 19-29, 31, and 32, also are patentable over *Jiang et al.* and *Hertling et al.*, at least in view of the error of rejecting the independent claims from which these claims variously depend, as well as for the additional features these claims recite.

For example, dependent claim 11 recites, *inter alia*, "wherein the apparatus is further caused to determine to access a terminal location service to **allow a location of the terminal to be provided to the network-enabled application**." In rejecting claim 11 the Examiner (per

page 7 of the Final Office Action) cites Figure 5 of *Jiang et al.* as allegedly disclosing the above features. Appellants respectfully disagree and submit that Figure 5, and the accompanying disclosure, fail to remotely teach or even render obvious the above discussed features.

Therefore, Appellants respectfully submit that the imposed rejection of independent claims 1, 18, 30, 33, 40, and 41, as well as dependent claims 2-6, 8-17, 31, and 32, under 35 U.S.C § 103(a) for obviousness based on *Jiang et al.* and *Hertling et al.* is not factually or legally viable. Hence, the rejection of claims 1-6, 8-33, 40, and 41 must be reversed, because *Jiang et al.* and *Hertling et al.* do not disclose or render obvious the features of these claims. Accordingly, reversal of this rejection by the Honorable Board is respectfully solicited.

B.   CLAIMS 34-39 ARE NOT RENDERED OBVIIOUS BY *JIANG ET AL.*, *HERTLING ET AL.*, AND *TUMMALA ET AL.*

As stated above, the Examiner bears the initial burden of establishing a *prima facie* basis to deny patentability to a claimed invention under any statutory provision.

Independent claim 34 recites, *inter alia*, "determining to facilitate access by the service provision infrastructure to the web services available from the visited network via a loosely-coupled interface of the visited network service broker that is exposed to the service provision infrastructure." "determine to expose a loosely-coupled interface to a service provision infrastructure for **brokering added-value network services from one or more of the terminals and network systems to the service provision infrastructure**, wherein the service provision infrastructure is for use by one or more of the terminals that **hosts network-enabled applications** and that is configured to interface with a second type of network system." Independent claims 38 and 39 recite similar features.

Jiang et al. and *Hertling et al.* fail to disclose or render obvious "determining to facilitate access by the service provision infrastructure to the web services available from the visited network via a loosely-coupled interface of the visited network service broker that is exposed to the service provision infrastructure," as recited in independent claim 34, and as similarly recited in independent claims 38 and 39, for at least similar reasons as discussed above with respect to independent claims 1, 18, 30, 33, 40, and 41. Furthermore, *Tummala et al.*, which is relied upon solely for an alleged teaching of an authorization voucher, fails to at least remedy the above deficiencies of *Jiang et al.* and *Hertling et al.* Even if, *arguendo*, the applied references are combined as proposed by the Examiner, and Appellants do not agree that the requisite basis for the asserted motivation has been established, the features recited in independent claims 34, 38, and 39 would not result.

Therefore, Appellants respectfully submit that the imposed rejection of independent claims 34, 38, and 39, as well as dependent claims 35-37, under 35 U.S.C § 103(a) for obviousness based on *Jiang et al.*, *Hertling et al.*, and *Tummala et al.* is not factually or legally viable. Hence, the rejection of claims 34-39 must be reversed, because *Jiang et al.*, *Hertling et al.*, and *Tummala et al.* do not disclose or render obvious the features of these claims. Accordingly, reversal of this rejection by the Honorable Board is respectfully solicited.

VIII.   CONCLUSION AND PRAYER FOR RELIEF

Based on the foregoing, it is apparent that none of the Examiner's rejections under 35 U.S.C. § 103(a) is factually or legally viable. Appellants therefore solicit the Honorable Board to reverse each of the Examiner's rejections.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 504213 and please credit any excess fees to such deposit account.

Respectfully Submitted,

DITTHAVONG MORI & STEINER, P.C.

May 23, 2011
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IX. CLAIMS APPENDIX A

This appendix presents claims 1-6 and 8-41 prior to the Examiner's decision to enter the Amendment filed concurrently herewith this Appeal Brief.

1. An apparatus comprising:

at least one processor; and

at least one memory including computer program code,

the at least one memory and the computer program code configured to, with the at least one

processor, cause the apparatus to perform at least the following:

determine to communicate with one or more terminals operable in a first type of network

system;

determine to expose a loosely-coupled interface to a service provision infrastructure for

brokering added-value network services from one or more of the terminals and

network systems to the service provision infrastructure, wherein the service provision

infrastructure is for use by one or more of the terminals that hosts network-enabled

applications and that is configured to interface with a second type of network system.

2. The apparatus as in Claim 1, wherein the loosely-coupled interface is a loosely-coupled standardized interface.

3. The apparatus as in Claim 2, wherein the loosely-coupled standardized interface is defined in Extensible Markup Language (XML).

4. The apparatus as in Claim 1, wherein the loosely-coupled interface comprises a web services interface.

5. The apparatus as in Claim 1, wherein the loosely-coupled interface comprises a single loosely-coupled web service interface exposed to the service provision infrastructure.

6. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to communicate with one or more network elements in the network infrastructure.

7. (Canceled)

8. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to communicate with one or more network elements in the network infrastructure and with one or more terminals.

9. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to access authentication services for use by the network-enabled application.

10. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to access a charging/billing service in connection with use of the network-enabled application.

11. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to access a terminal location service to allow a location of the terminal to be provided to the network-enabled application.

12. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to store subscription information to a profile register and to verify subscription intentions of an end-user of the terminal.

13. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to access a presence service to allow user presence information to be provided to the network-enabled application.

14. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to broker provisioning of mobile terminals.

15. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to facilitate pushing content to the terminals.

16. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to access end-user privacy information and determine to control which information other brokers will provide to the service provision infrastructure.

17. The apparatus as in Claim 16, wherein the determination to control which information other brokers will provide to the service provision infrastructure is based on parameters defined by an end-user of the terminal, wherein the parameters may be provided by the end-user manually at a time in which the end-user privacy information is required, or automatically where the parameters were defined by the end-user in advance.

18. A method, comprising:

determining to provide at least one network service broker logically between one or more network infrastructures, wherein at least one of the network infrastructures is of a first type of network system, and a service provision infrastructure operating on top of the network infrastructures and configured to interface with a second type of network system

wherein the network service broker comprises at least one terminal-coupled broker to communicate directly with one or more terminals;

determining to expose a loosely-coupled interface of the network service broker to the service provision infrastructure; and

determining to facilitate access by network applications of the second type of network system to value-added services within the at least one network infrastructure of the first type of network system via the loosely-coupled network service broker interface.

19. The method of Claim 18, wherein the determination to facilitate access via the loosely-coupled network service broker interface comprises making the service available to the applications via the loosely-coupled network service broker interface using any of a plurality of service provision infrastructure technologies.

20. The method of Claim 18, further comprising determining to communicate between the network service broker and the network infrastructure regardless of technological differences in one or more different network elements operating within the network infrastructure.

21. The method of Claim 18, further comprising determining to communicate between the network service broker and the network infrastructure regardless of technological differences in one or more network infrastructure network systems having different access methods.

22. The method of Claim 18, wherein the one or more network infrastructures collectively implement a plurality of different network technologies, and wherein the network service broker accommodates technological variations between the network technologies and service provision infrastructure technologies.

23. The method of Claim 18, wherein the determination to expose a loosely-coupled interface of the network service broker to the service provision infrastructure comprises exposing a loosely-coupled web services interface to the service provision infrastructure.

24. The method of Claim 18, further comprising determining to define the loosely-coupled interface in Extensible Markup Language (XML).

25. The method of Claim 18, wherein the determination to provide at least one network service broker comprises providing a plurality of network service brokers, and wherein each of the plurality of network service brokers comprises a loosely-coupled interface exposed to the service provision infrastructure for communication therebetween.

26. The method of Claim 25, wherein at least some of the plurality of network service brokers intercommunicate.

27. The method of Claim 18, wherein the network infrastructures comprise at least one fixed network.

28. The method of Claim 18, wherein the network infrastructures comprise at least one wireless network.

29. The method of Claim 18, further comprising determining to utilize the value-added service by the applications as arranged by the network service broker.

30. A method, comprising:

determining to provide at least one network service broker logically between one or more terminals operating in a first type of network system and a service provision infrastructure

operating on top of a network infrastructure and configured to interface with a second type

of network system;

determining to expose a loosely-coupled interface of the network service broker to the service

provision infrastructure; and

determining to facilitate access by the network applications directly to value-added services

provided by the terminals via the loosely-coupled network service broker interface.

31. The method as in Claim 30, further comprising determining to communicate a terminal

type of one or more of the terminals to the network service broker, and determining to provide the

terminal type to the service provision infrastructure via the loosely-coupled interface of the

network service broker.

32. The method as in Claim 30, further comprising determining to configure one or more

user terminals via cooperative communication between the user terminals and the network service

broker at the direction of the network application, wherein the configuration is accomplished

regardless of the protocol utilized by the user terminals.

33. A method, comprising:

determining to provide at least one hybrid network service broker logically between one or

more network infrastructures, wherein at least one of the network infrastructures is of a

first type of network system, and a service provision infrastructure operating on top of the

network infrastructures and configured to interface with a second type of network system,

and between one or more terminals and the service provision infrastructure;

determining to expose a loosely-coupled interface of the hybrid network service broker to the

service provision infrastructure; and

determining to facilitate access by the network applications via the loosely-coupled hybrid network service broker interface directly to value-added services provided via one or both of the terminals and to value-added services provided by the network infrastructures.

34. A method, comprising:

determining to provide a use authorization voucher to a visited network service broker associated with a visited network;

receiving, at a service provision infrastructure, an address of the visited network service broker from a home network service broker associated with a home network of a terminal that has roamed to the visited network, wherein the home network service broker exposes a loosely-coupled interface to the service provision infrastructure to facilitate communication therebetween;

determining to access the visited network service broker by the service provision infrastructure using the address of the visited network service broker; and

determining to facilitate access by the service provision infrastructure to the web services available from the visited network via a loosely-coupled interface of the visited network service broker that is exposed to the service provision infrastructure.

35. The method as in Claim 34, wherein the determination to provide the use authorization voucher to the visited network service broker comprises providing the use authorization voucher to the service provision infrastructure via the loosely-coupled interface of the home network service broker, and in turn providing the use authorization voucher to the visited network service broker via the loosely-coupled interface of the visited network service broker.

36. The method as in Claim 34, wherein the determination to provide the use authorization voucher to the visited network service broker comprises directly providing the use authorization voucher from the home network service broker to the visited network service broker.

37. The method as in Claim 34, wherein the determination to provide the use authorization voucher to the visited network service broker comprises providing the use authorization voucher to the visited network if a roaming agreement between the home and visited networks authorizes providing the use authorization voucher to the visited network.

38. A method comprising:

determining to communicate between a service provision infrastructure and a home network service broker associated with a home network via a loosely-coupled interface of the home network service broker exposed to the service provision infrastructure; and

determining to communicate between the home network service broker and a visited network service broker associated with a visited network, wherein the home network service broker serves as a proxy in accessing a service functionality available via the visited network.

39. A method comprising:

determining to provide a visited network service broker logically between a visited network and a service provision infrastructure operating on top of a network infrastructure;

determining to expose a loosely-coupled interface of the visited network service broker to the service provision infrastructure; and

determining to facilitate access by the service provision infrastructure to a service functionality available from the visited network via the loosely-coupled interface of the visited network service broker.

40. An apparatus comprising:

at least one processor; and

at least one memory including computer program code,

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following:

determining to communicate directly with one or more terminals;

determining to access a service functionality from a network infrastructure; and

determining to expose a loosely coupled interface to a service provision infrastructure, wherein the loosely-coupled interface comprises a web services-based interface having Extensible Markup Language (XML) schemata built on top of a web services platform to expose the service functionality available via a network.

41. A non-transitory computer readable storage medium carrying one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to at least perform the following steps:

receiving a request for value-added service information from a service provision infrastructure loosely coupled to the apparatus;

obtaining the value-added service information directly from a terminal coupled to the apparatus; and

determining to provide the obtained value-added service information to the service provision

infrastructure.

X.   CLAIMS APPENDIX B

If the Examiner enters the Amendment submitted concurrently herewith, this appendix presents claims 1-6 and 8-41 as amended.

1. An apparatus comprising:

at least one processor; and

at least one memory including computer program code,

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following:

determine to communicate with one or more terminals operable in a first type of network system;

determine to expose a loosely-coupled interface to a service provision infrastructure for brokering added-value network services from one or more of the terminals and network systems to the service provision infrastructure, wherein the service provision infrastructure hosts network-enabled applications for use by one or more of the terminals and is configured to interface with a second type of network system.

2. The apparatus as in Claim 1, wherein the loosely-coupled interface is a loosely-coupled standardized interface.

3. The apparatus as in Claim 2, wherein the loosely-coupled standardized interface is defined in Extensible Markup Language (XML).

4. The apparatus as in Claim 1, wherein the loosely-coupled interface comprises a web services interface.

5.   The apparatus as in Claim 1, wherein the loosely-coupled interface comprises a single loosely-coupled web service interface exposed to the service provision infrastructure.

6.   The apparatus as in Claim 1, wherein the apparatus is further caused to determine to communicate with one or more network elements in the network infrastructure.

7. (Canceled)

8.   The apparatus as in Claim 1, wherein the apparatus is further caused to determine to communicate with one or more network elements in the network infrastructure and with one or more terminals.

9.   The apparatus as in Claim 1, wherein the apparatus is further caused to determine to access authentication services for use by the network-enabled application.

10.   The apparatus as in Claim 1, wherein the apparatus is further caused to determine to access a charging/billing service in connection with use of the network-enabled application.

11.   The apparatus as in Claim 1, wherein the apparatus is further caused to determine to access a terminal location service to allow a location of the terminal to be provided to the network-enabled application.

12.   The apparatus as in Claim 1, wherein the apparatus is further caused to determine to store subscription information to a profile register and to verify subscription intentions of an end-user of the terminal.

13. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to access a presence service to allow user presence information to be provided to the network-enabled application.

14. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to broker provisioning of mobile terminals.

15. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to facilitate pushing content to the terminals.

16. The apparatus as in Claim 1, wherein the apparatus is further caused to determine to access end-user privacy information and determine to control which information other brokers will provide to the service provision infrastructure.

17. The apparatus as in Claim 16, wherein the determination to control which information other brokers will provide to the service provision infrastructure is based on parameters defined by an end-user of the terminal, wherein the parameters may be provided by the end-user manually at a time in which the end-user privacy information is required, or automatically where the parameters were defined by the end-user in advance.

18. A method, comprising:

determining to provide at least one network service broker logically between one or more network infrastructures, wherein at least one of the network infrastructures is of a first type of network system, and a service provision infrastructure operating on top of the network infrastructures and configured to interface with a second type of network system

wherein the network service broker comprises at least one terminal-coupled broker to communicate directly with one or more terminals;

determining to expose a loosely-coupled interface of the network service broker to the service provision infrastructure; and

determining to facilitate access by network applications of the second type of network system to value-added services within the at least one network infrastructure of the first type of network system via the loosely-coupled network service broker interface.

19. The method of Claim 18, wherein the determination to facilitate access via the loosely-coupled network service broker interface comprises making the service available to the applications via the loosely-coupled network service broker interface using any of a plurality of service provision infrastructure technologies.

20. The method of Claim 18, further comprising determining to communicate between the network service broker and the network infrastructure regardless of technological differences in one or more different network elements operating within the network infrastructure.

21. The method of Claim 18, further comprising determining to communicate between the network service broker and the network infrastructure regardless of technological differences in one or more network infrastructure network systems having different access methods.

22. The method of Claim 18, wherein the one or more network infrastructures collectively implement a plurality of different network technologies, and wherein the network service broker accommodates technological variations between the network technologies and service provision infrastructure technologies.

23. The method of Claim 18, wherein the determination to expose a loosely-coupled interface of the network service broker to the service provision infrastructure comprises exposing a loosely-coupled web services interface to the service provision infrastructure.

24. The method of Claim 18, further comprising determining to define the loosely-coupled interface in Extensible Markup Language (XML).

25. The method of Claim 18, wherein the determination to provide at least one network service broker comprises providing a plurality of network service brokers, and wherein each of the plurality of network service brokers comprises a loosely-coupled interface exposed to the service provision infrastructure for communication therebetween.

26. The method of Claim 25, wherein at least some of the plurality of network service brokers intercommunicate.

27. The method of Claim 18, wherein the network infrastructures comprise at least one fixed network.

28. The method of Claim 18, wherein the network infrastructures comprise at least one wireless network.

29. The method of Claim 18, further comprising determining to utilize the value-added service by the applications as arranged by the network service broker.

30. A method, comprising:

determining to provide at least one network service broker logically between one or more terminals operating in a first type of network system and a service provision infrastructure

operating on top of a network infrastructure and configured to interface with a second type

of network system;

determining to expose a loosely-coupled interface of the network service broker to the service

provision infrastructure; and

determining to facilitate access by the network applications directly to value-added services

provided by the terminals via the loosely-coupled network service broker interface.

31. The method as in Claim 30, further comprising determining to communicate a terminal type of one or more of the terminals to the network service broker, and determining to provide the terminal type to the service provision infrastructure via the loosely-coupled interface of the network service broker.

32. The method as in Claim 30, further comprising determining to configure one or more user terminals via cooperative communication between the user terminals and the network service broker at the direction of the network application, wherein the configuration is accomplished regardless of the protocol utilized by the user terminals.

33. A method, comprising:

determining to provide at least one hybrid network service broker logically between one or

more network infrastructures, wherein at least one of the network infrastructures is of a

first type of network system, and a service provision infrastructure operating on top of the

network infrastructures and configured to interface with a second type of network system,

and between one or more terminals and the service provision infrastructure;

determining to expose a loosely-coupled interface of the hybrid network service broker to the

service provision infrastructure; and

determining to facilitate access by the network applications via the loosely-coupled hybrid network service broker interface directly to value-added services provided via one or both of the terminals and to value-added services provided by the network infrastructures.

34. A method, comprising:

determining to provide a use authorization voucher to a visited network service broker associated with a visited network;

receiving, at a service provision infrastructure, an address of the visited network service broker from a home network service broker associated with a home network of a terminal that has roamed to the visited network, wherein the home network service broker exposes a loosely-coupled interface to the service provision infrastructure to facilitate communication therebetween;

determining to access the visited network service broker by the service provision infrastructure using the address of the visited network service broker; and

determining to facilitate access by the service provision infrastructure to the web services available from the visited network via a loosely-coupled interface of the visited network service broker that is exposed to the service provision infrastructure.

35. The method as in Claim 34, wherein the determination to provide the use authorization voucher to the visited network service broker comprises providing the use authorization voucher to the service provision infrastructure via the loosely-coupled interface of the home network service broker, and in turn providing the use authorization voucher to the visited network service broker via the loosely-coupled interface of the visited network service broker.

36. The method as in Claim 34, wherein the determination to provide the use authorization voucher to the visited network service broker comprises directly providing the use authorization voucher from the home network service broker to the visited network service broker.

37. The method as in Claim 34, wherein the determination to provide the use authorization voucher to the visited network service broker comprises providing the use authorization voucher to the visited network if a roaming agreement between the home and visited networks authorizes providing the use authorization voucher to the visited network.

38. A method comprising:

determining to communicate between a service provision infrastructure and a home network service broker associated with a home network via a loosely-coupled interface of the home network service broker exposed to the service provision infrastructure; and

determining to communicate between the home network service broker and a visited network service broker associated with a visited network, wherein the home network service broker serves as a proxy in accessing a service functionality available via the visited network.

39. A method comprising:

determining to provide a visited network service broker logically between a visited network and a service provision infrastructure operating on top of a network infrastructure;

determining to expose a loosely-coupled interface of the visited network service broker to the service provision infrastructure; and

determining to facilitate access by the service provision infrastructure to a service functionality available from the visited network via the loosely-coupled interface of the visited network service broker.

40. An apparatus comprising:

at least one processor; and

at least one memory including computer program code,

the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following:

determining to communicate directly with one or more terminals;

determining to access a service functionality from a network infrastructure; and

determining to expose a loosely coupled interface to a service provision infrastructure, wherein the loosely-coupled interface comprises a web services-based interface having Extensible Markup Language (XML) schemata built on top of a web services platform to expose the service functionality available via a network.

41. A non-transitory computer readable storage medium carrying one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to at least perform the following steps:

receiving a request for value-added service information from a service provision infrastructure loosely coupled to the apparatus;

obtaining the value-added service information directly from a terminal coupled to the apparatus; and

determining to provide the obtained value-added service information to the service provision

infrastructure.

XI. <u>EVIDENCE APPENDIX</u>

Appellants are unaware of any evidence that is required to be submitted in the present Evidence Appendix.

XII. **RELATED PROCEEDINGS APPENDIX**

Appellants are unaware of any related proceedings that are required to be submitted in the present Related Proceedings Appendix.